

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018

**BPO2864 – PRODUCTION & OPERATIONS
MANAGEMENT**
(All sections / Groups)

3 MARCH 2018

2.30 p.m. – 4.30 p.m.

(2 Hours)

INSTRUCTIONS TO STUDENTS:

1. This Question paper consists of 6 pages including the cover page with 5 Questions only. The formulas are given on page 6.
2. Attempt ALL FIVE questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

QUESTION 1

- (a) Read the following case and answer the given questions.

Outsourcing Offshore at Darden

Darden Restaurants, owner of popular brands such as Olive Garden and Red Lobster, serves more than 300 million meals annually in over 1,700 restaurants across the U.S. and Canada. To achieve competitive advantage via its supply chain, Darden must achieve excellence at each step. With purchases from 35 countries, and seafood products with a shelf life as short as 4 days, this is a complex and challenging task.

Those 300 million meals annually mean 40 million pounds of shrimp and huge quantities of tilapia, swordfish, and other fresh purchases. Fresh seafood is typically flown to the U.S. and monitored each step of the way to ensure that 34°F is maintained.

Darden's purchasing agents travel the world to find competitive advantage in the supply chain. Darden personnel from supply chain and development, quality assurance, and environmental relations contribute to developing, evaluating, and checking suppliers. Darden also has seven native-speaking representatives living on other continents to provide continuing support and evaluation of suppliers. All suppliers must abide by Darden's food standards, which typically exceed FDA and other industry standards. Darden expects continuous improvement in durable relationships that increase quality and reduce cost.

Darden's aggressiveness and development of a sophisticated supply chain provide an opportunity for outsourcing. Much food preparation is labor intensive and is often more efficient when handled in bulk. This is particularly true where large volumes may justify capital investment. For instance, Tyson and Iowa Beef prepare meats to Darden's specifications much more economically than can individual restaurants. Similarly, Darden has found that it can outsource both the cutting of salmon to the proper portion size and the cracking/peeling of shrimp more cost-effectively offshore than in U.S. distribution centers or individual restaurants.

- (i) What are some outsourcing opportunities in a restaurant?

[4 Marks]

Continued...

- (ii) What supply chain issues are unique to a firm sourcing from 35 countries?

[4 Marks]

- (iii) Examine how other firms or industries develop international supply chains as compared to Darden.

[4 Marks]

- (b) Raj Kumar is president of Lakefront Manufacturing, a producer of bicycle tires. Raj makes 1,000 tires per day with the following resources:

Labour	400 hours per day @ \$12.50 per hour
Raw material	20,000 Kg per day @ \$1 per Kg
Energy	\$5000 per day
Capital costs	\$10000 per day

- (i) What is the labor productivity per labour-hour for these tires?

[3 Marks]

- (ii) What is the multifactor productivity for these tires?

[3 Marks]

- (iii) What is the percent change in multifactor productivity if Raj can reduce the energy bill by \$1,000 per day without cutting production or changing any other inputs?

[2 Marks]

QUESTION 2

- (a) Identify the **FOUR (4)** costs of quality. Which one is the hardest to evaluate? Explain.

[5 Marks]

- (b) A company looking for venture capitalist funding is deciding on the design of its operating system (OS) for its new phone. The first option is to simply buy the OS from another company. This would result in sales of either 10,000 units if the market is not crowded with similar phones, or sales of only 3,000 units if the market is crowded. If the company decides to design its own OS, the phone would have sales

Continued...

of 70,000 units if the OS was popular, but sales of only 2,000 if the OS was a failure. Suppose that to recoup the cost of designing their own OS the company would need to sell twice as many phones as when they simply buy the OS for the profit from the scenarios to be equal.

- (i) Draw the appropriate decision tree

[6 Marks]

- (ii) Which option should the company choose if the probability that the market is crowded is 50% and the probability that the OS is popular is 75%?

[8 Marks]

QUESTION 3

- (a) Sales of tablet computers at Ted Link electronic store in Lowyat, over the past 10 weeks are shown in the table below:

Week	Demand	Week	Demand
1	20	6	29
2	21	7	36
3	28	8	22
4	37	9	25
5	25	10	28

- (i) Forecast demand for each week, including week 10, using exponential smoothing with $\alpha = .5$ (initial forecast = 20).

[5 Marks]

- (ii) Compute the MAD

[5 Marks]

- (iii) Compute the tracking signal

[2 Marks]

Continued...

- (b) Proximity or closeness implies that a firm should locate close to something. What are the three kinds of proximity described in the text? What are the basic conditions under which each is appropriate? What kinds of firms are likely to use each of these?

[8 Marks]

QUESTION 4

- (a) How can an organisation develop and implement lean operations?

[8 Marks]

- (b) A local artisan uses supplies purchased from an overseas supplier. The owner believes the assumptions of the EOQ model are met reasonably well. Minimization of inventory costs is her objective. Relevant data, from the files of the craft firm, are annual demand (D) = 150 units, ordering cost (S) = \$42 per order, and holding cost (H) = \$4 per unit per year.

- (i) How many should she order at one time?

[4 Marks]

- (i) How many times per year will she replenish her inventory of this material?

[4 Marks]

- (ii) What will be the total annual inventory (holding and setup) costs associated with this material (rounded to the nearest dollar)?

[4 Marks]

QUESTION 5

- (a) Most people would argue that a service firm must follow chase or mixed strategies. On the other hand, most state agencies, which are clearly service-oriented, are not at all able to "chase" demand. Discuss how they manipulate demand to allow the level strategy to be used.

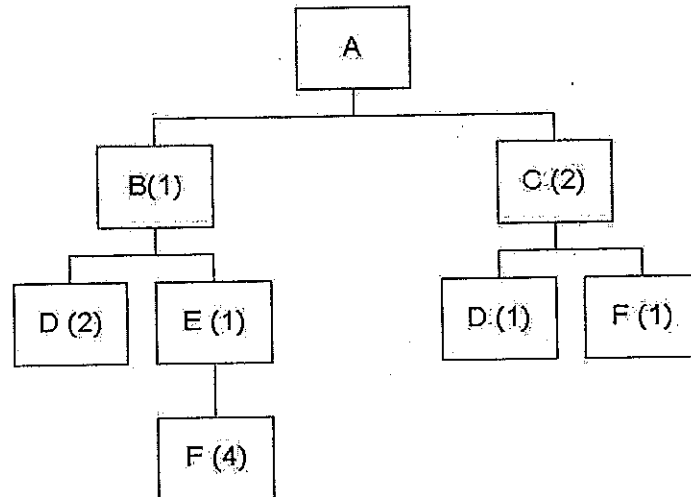
[8 Marks]

- (b) What are the **FIVE (5)** reasons given by suppliers for their reluctance to enter into JIT systems?

[5 Marks]

Continued...

- (c) Consider the following product structure. Fifty units of Product A are needed. How many units of B, C, D, E, and F are needed?



[7 Marks]

Formulas

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

$$F_t = F_{t-1} + \alpha (A_{t-1} - F_{t-1})$$

$$MAD = \frac{\sum |A_t - F_t|}{n}$$

$$Q^* = \sqrt{\frac{2DS}{H}}$$

$$N = \frac{D}{Q^*}$$

$$\text{Setup Cost} = \frac{D}{Q^*} S$$

$$\text{Holding cost} = \frac{Q^*}{2} H$$

$$\text{Tracking Signal} = \frac{\text{Cumulative Error}}{MAD}$$

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